

CLAIMS

1. A process for executing programs on at least one processor having a given instruction set architecture, characterized in that it comprises the operations of:

- compiling the program to be executed and translating said program into native instructions of said instruction set architecture, organizing the instructions deriving from the translation of said program into respective bundles arranged in order of successive bundles, each bundle grouping together instructions adapted to be executed in parallel by said at least one processor;
- ordering said bundles of instructions in respective sub-bundles, said sub-bundles identifying a first set of instructions, which must be executed before the instructions belonging to the next bundle of said order, and a second set of instructions that can be executed both before and in parallel with respect to the instructions belonging to said next bundle of said order, it being possible for at least said second set of instructions to be the null set;
- defining a sequence of execution of the instructions of said sub-bundles in successive operating cycles of said at least one processor, while preventing, in assigning each sub-bundle to an operating cycle of the processor, simultaneous assignment, to the same operating cycle, of two sub-bundles corresponding to instructions belonging to said first set of two successive bundles of said order; and
- executing said instructions on at least one said processor respecting said execution sequence.

2. The process according to Claim 1, characterized in that it comprises the operation of selectively varying the overall length of instruction executed for each cycle by said at least one processor.

3. The process according to Claim 1, characterized in that it comprises the operation of identifying the instructions belonging to a sub-bundle of said

first set and of said second set by means of a binary symbol set at a first logic value and a second logic value, respectively.

4. The process according to Claim 3, characterized in that it comprises the operations of:

- detecting when one between said first set and said second set is the null set; and
- inserting in the respective sub-bundle a fictitious instruction which does not imply any execution of operations.

5. The process according to Claim 1, characterized in that it comprises the operation of identifying the instructions belonging to a sub-bundle of said first set and of said second set by means of two distinct binary symbols which identify the last instruction of the respective sub-bundle.

6. The process according to Claim 1, for executing programs on a multiprocessor system comprising a plurality of processors having said instruction-set architecture, characterized in that it comprises the operations of:

- instantiating the processors of said plurality with respective degrees of parallelism of execution with at least two different values of said parallelism of execution in the context of said plurality; and
- selectively distributing execution of the instructions of said sequence of execution among the processors of said plurality, the instructions of said sequence of execution being directly executable by the processors of said plurality in conditions of binary compatibility.

7. The process according to Claim 6, characterized in that it comprises the operation of selectively distributing the execution of the instructions of

said sequence among the processors of said plurality, dynamically distributing the computational load of said processors.

8. The process according to Claim 6, characterized in that it comprises the operation of selectively distributing the execution of the instructions of said sequence among said processors of said plurality with the criterion of equalizing the operating frequency of the processors of said plurality.

9. The process according to Claim 6, characterized in that it comprises the operation of performing a process of control executed by at least one of the processors of said plurality so as to equalize its own workload with respect to the other processors of said multiprocessor system.

10. The process according to Claim 9, characterized in that it comprises the operation of drawing up a table accessible by said control process, said table having items chosen from the group made up of:

- a list of processes that are being executed or are suspended on any processor of said plurality of processors;

- the progressive number thereof according to the order of activation;

- the percentage of maximum power of the processor that is used by said process;

- the execution time;

- the amount of memory of the system used by said process to be able to execute the function for which it is responsible;

- the processor on which the process currently resides; and

- the address of the portion of memory in which the data and the instructions are stored.

11. A processor system, preferably of a multiprocessor type, configured for operating with the process according to Claim 1.

12. A process of executing programs on a system having a plurality of processors comprising:

- compiling the program to be executed;
- translating said program into instruction sets;
- organizing said instruction sets into respective groups, each group having a predetermined priority for execution in a given processor of said plurality;
- encoding said instructions for execution on said processors;
- provide in the encoded instruction designated number of initial bits identifying said predetermined priority of the instruction set.

13. The process of Claim 12, wherein the execution of programs comprises directing of the instruction sets to said processors of said plurality according to the priority bits encoded into the said instruction set.

14. The process of Claim 12, wherein said priority is determined based on the amount of memory required by each of the processors of said plurality to execute said instruction set.

15. The process of Claim 12, wherein said priority is determined based on the amount of percentage of maximum power required by each of the processors of said plurality to execute said instruction set.

16. A system comprising:

- a plurality of processors coupled for receiving instruction sets;
- a first processor of the plurality coupled to said instruction stream, capable of directing said instruction sets to each of the processors of said plurality;

said first processor directing the instructions sets to each of the processors of said plurality based on the priority values carried by the designated number of bits encoded into each instruction set.

17. The system according to Claim 16, wherein the priority for the instruction sets is based on the amount of memory required by each of the processors of said plurality to execute said instruction set.

18. The system according to Claim 16, wherein the priority for the instruction sets is based on the amount of percentage of maximum power required by each of the processors of said plurality to execute said instruction set.